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Division of Facilities Construction & Management

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UNVC

COLVIN ENGINEERING ASSOCIATES

kW ENGINEERING

ROCKY MOUNTAIN POWER

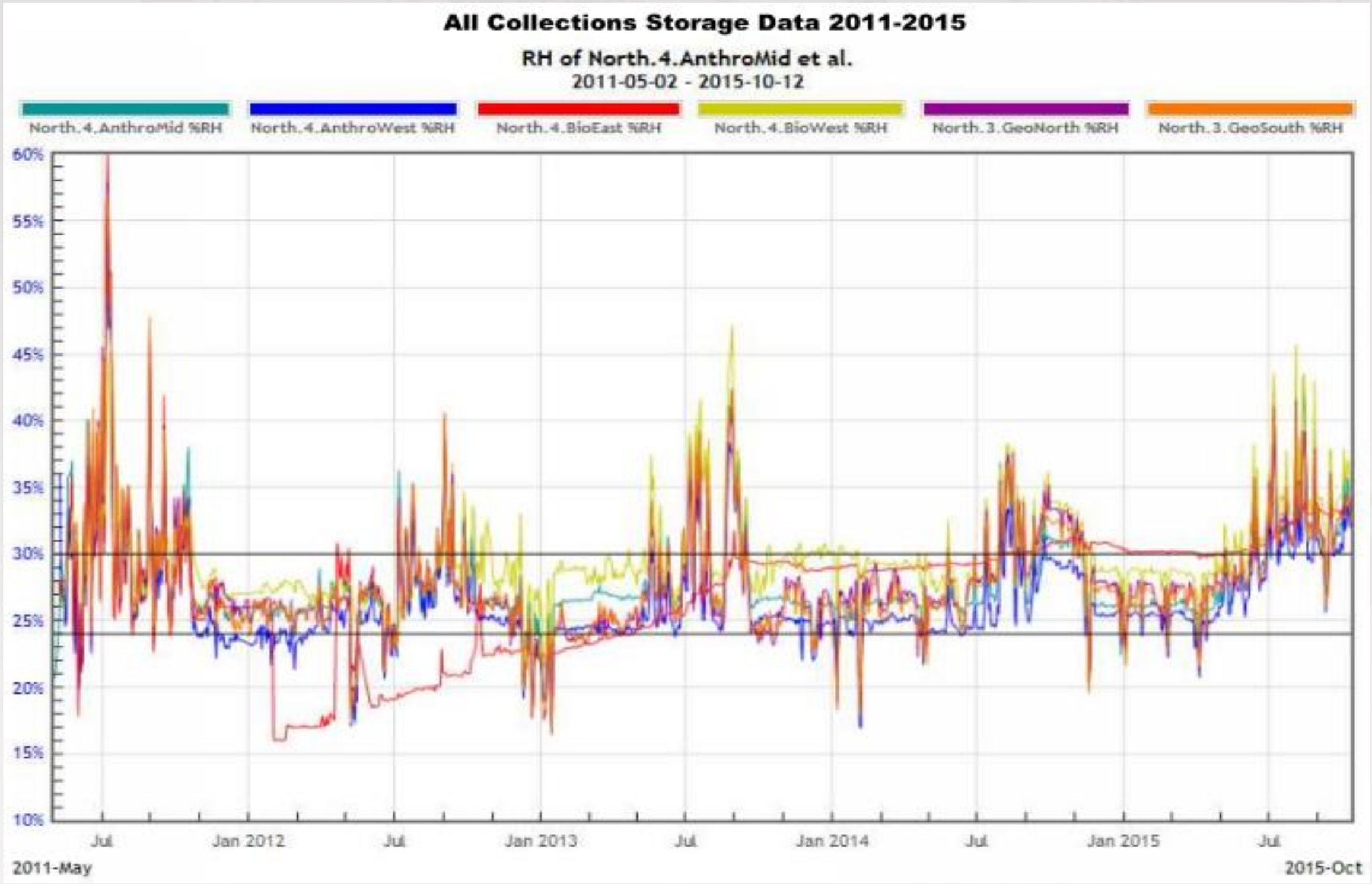
Utah Natural History Museum

Retro Commissioning Project

The Problem

- Collection Rooms (Not achieving requirements)
  - +/- 3% Humidity Control
  - +/- 2 F Temperature Control
- Traveling Exhibit Rooms (Varies Exhibit to Exhibit)
  - +/- 2% Humidity Control
  - +/- 1F Temperature Control
- Energy Usage: 3 times more than modeled.
- Maintenance: Replacing Humidifier Canisters every 3 weeks
- Other Sequences not functioning correctly (Boilers).

Humidity Levels



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Solutions and Resolutions

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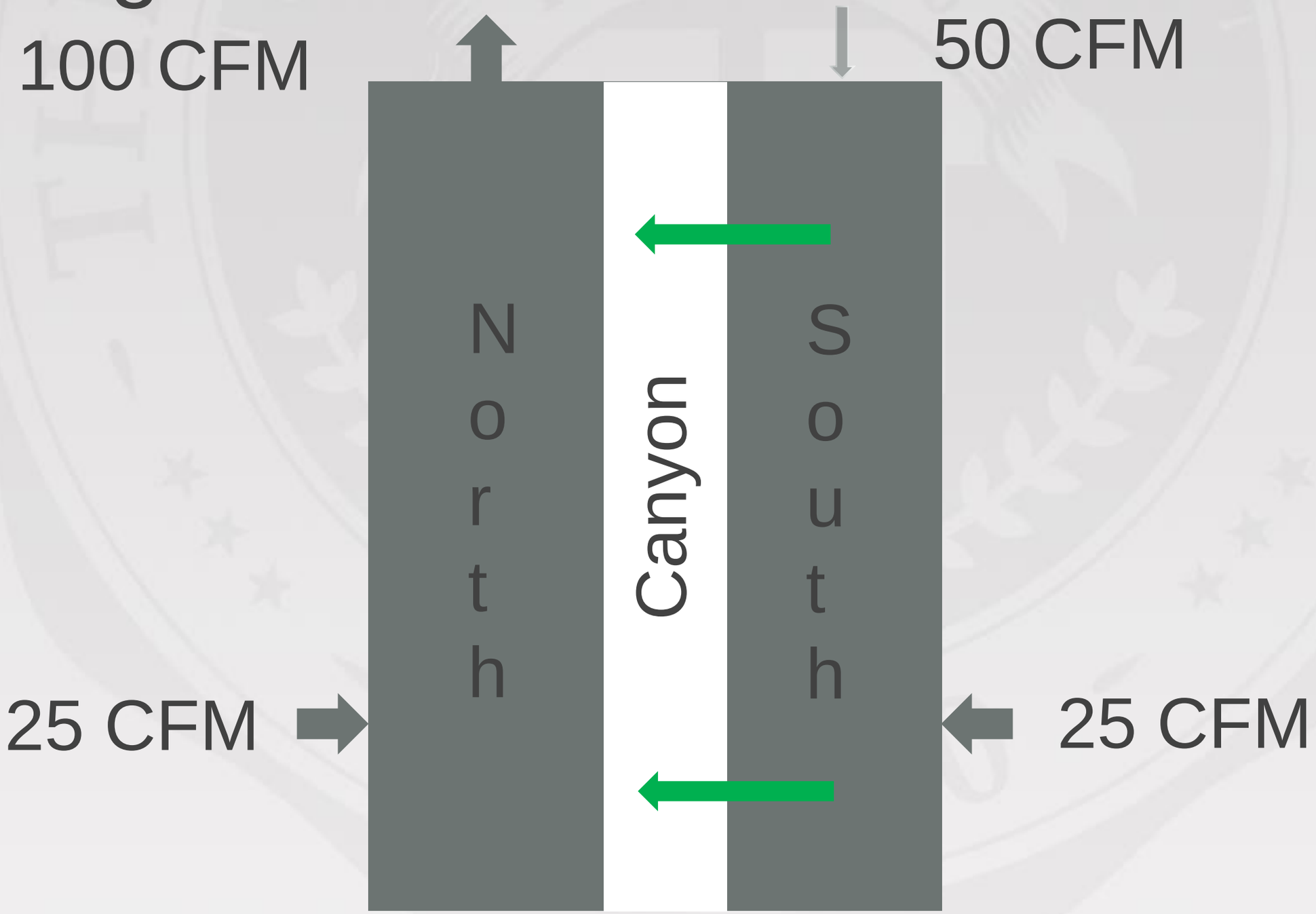
Building Pressurization



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OA Dampers Closed

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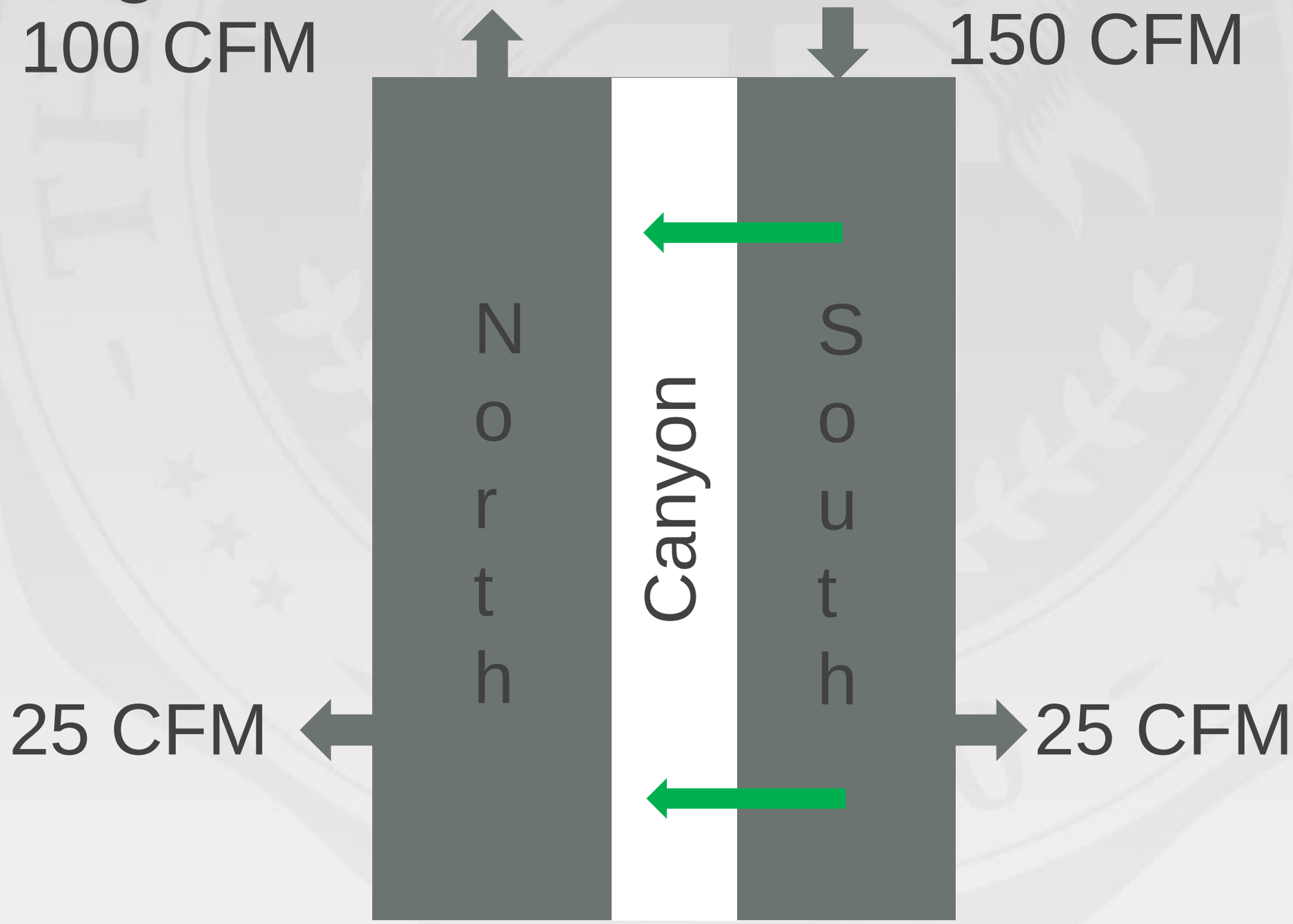
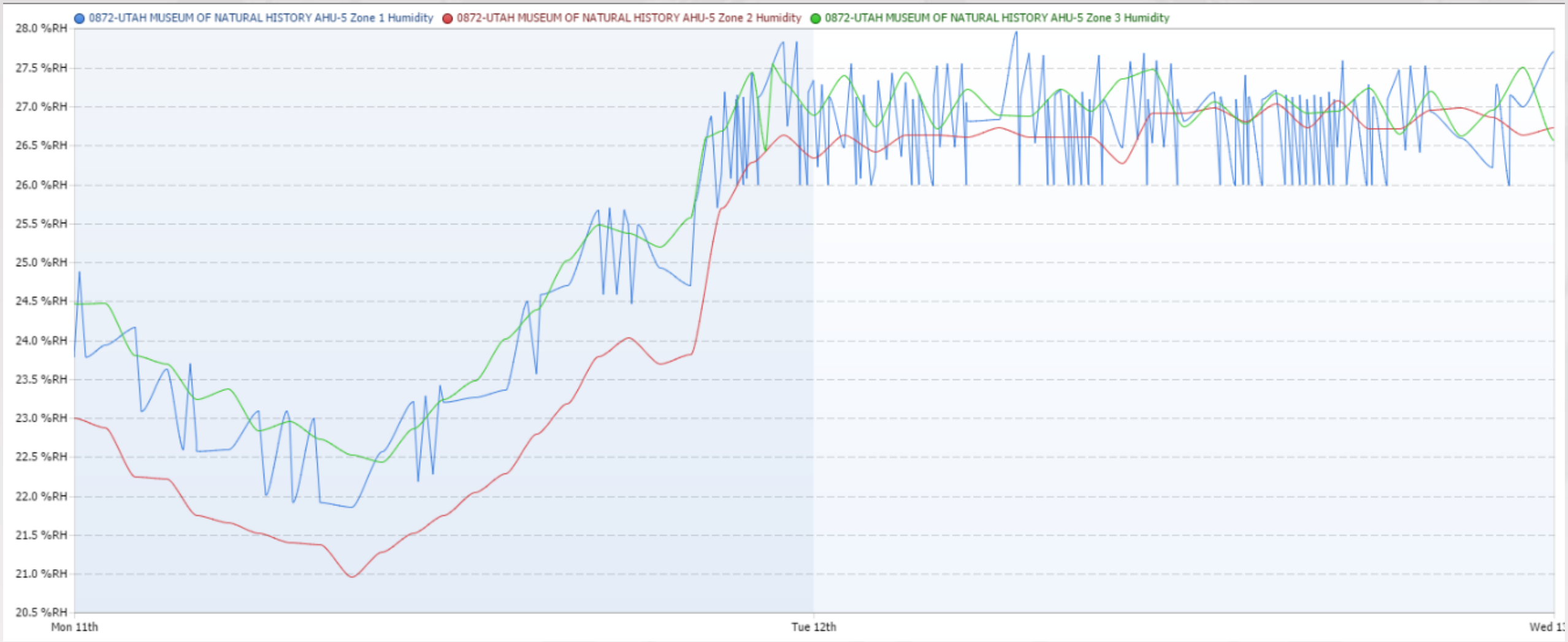
Building Pressurization



Change in Building Pressure – Immediate Results



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Aftermath and Measured Cost Avoidance

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Energy Cost Avoidance

Electrical (kWh)

Month	2015	2016	Delta	Cost Savings
June	270,000	187,500	82,500	$ 4,900
July	282,300	189,900	92,400	$ 6,200
August	260,700	196,800	63,900	$ 3,900
September	250,800	206,700	44,100	$ 2,500

Gas (DTH)

Month	2015	2016	Delta	Cost Savings
June	1,510	750	760	$ 5,600
July	1,560	750	810	$ 5,800
August	1,590	640	950	$ 5,900
September	940	620	320	$ 2,300

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First Year Cost Avoidance

$96,979 in gas/electric
$6000 in water

O&M Cost Avoidance

$12,000 in Cartridges
$13,000 in Labor

Total First Year Cost Avoidance

$ 121,979

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Commissioning Cost

$60,000

Typical Investment ROI

8%

THIS PROJECT ROI

103%